1999 INEEL Impacts

1999 – The 50th Anniversary of the INEEL

INEEL 50 years of innovation

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This report depicts the social and economic impacts generated by the Idaho National Engineering and Environmental Laboratory (INEEL) for the period between October 1, 1998 and September 30, 1999 (Fiscal Year 1999). Employee wage and salary spending and INEEL procurement activity are measured for their impacts on the seven counties, ten cities, and 26 public school districts of southeastern Idaho, which is where the majority of INEEL employees and their families reside. Relative predominance of INEEL-dependent households within the various communities is estimated in terms of property, sales, and income tax contributions. The report also provides INEEL workforce statistics and employee involvement in community life.

Introduction

...the INEEL is positioned to effectively meet the needs of the U.S. Department of Energy and the nation now and into the future...

While scientific methods are used throughout the report to quantify the economic impacts of employee wages and contractor activity, the economic benefit to the people and communities of Idaho resulting from environmental stewardship, economic development and technology innovation activities are difficult to precisely measure, but are nonetheless significant. A number of such activities and their benefits are highlighted in the following paragraphs.

1999 marks 50 years of scientific and technical excellence for the INEEL.

For 50 years the Idaho National Engineering and Environmental Laboratory (INEEL) has served the nation by developing critical nuclear energy applications for civilian power and naval propulsion systems. The INEEL, referred to as the "Laboratory," began in 1949 as the National Reactor Testing Station. It remained attached to the Atomic Energy Commission until 1974, when it became the Idaho National Engineering Laboratory of the newly created U.S. Department of Energy (DOE). Throughout this period, world and national events led to modifications of the Laboratory's overall mission.

In the 1970s, the nation faced an energy crisis and the Laboratory applied its expertise to the development of alternative energy sources such as electric vehicles, hydropower and geothermal energy.

During the 1980s, the Laboratory broadened its research expertise into such wide-ranging disciplines as materials sciences, chemistry, biotechnology, and physical and environmental sciences. These broader capabilities enabled the Laboratory to better support DOE's mission in energy efficiency,

Introduction

Environmental Management at the INEEL

Storage

- Began operation of new drying/canning facility for spent nuclear fuel
- Completed Environmental Assessment for Three Mile Island dry storage facility
- Constructed temporary dry storage facility to hold Three Mile Island spent fuel and debris
- Moved 518 spent fuel units from outdated to new wet storage facility.

Treatment

- Completed calcining 4,000 cubic meters of liquid high-level waste
- Began calcining 1.4 million gallons of sodium-bearing waste
- Treated 3,690 cubic meters of low-level waste at WERF
- Incinerated 205.5 cubic meters of mixed low-level waste
- Recycled or cubed 20 percent of industrial and commercial waste generated at the INEEL.

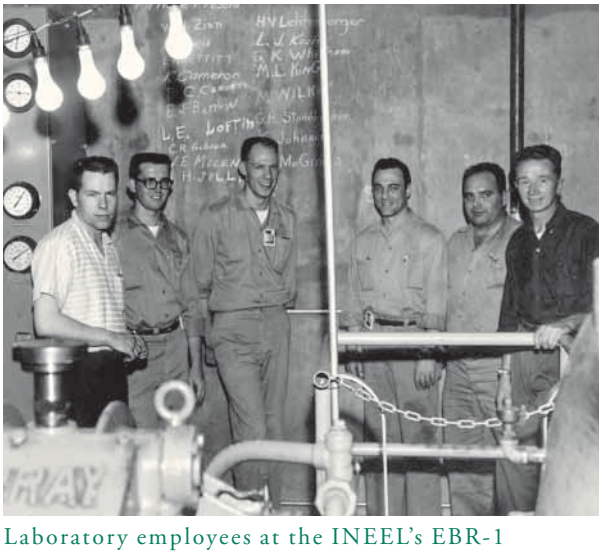
Disposal

- Transported 177 cubic meters of hazardous waste to commercial disposal sites
- Disposed 12.7 cubic meters of fly ash and 3,264 cubic meters of low-level waste to RWMC.

national defense, environmental protection, and security.

With the end of the Cold War, increased emphasis was placed on safe and effective long-term storage of radioactive waste. The Radioactive Waste Management Complex (RWMC) and the Waste Experimental Reduction Facility (WERF) were instrumental in positioning the Laboratory as a leader in the waste management industry. In January 1997, the Laboratory's name was expanded from the Idaho National Engineering Laboratory to the Idaho National Engineering and Environmental Laboratory to reflect its expanded mission of environmental management and research and development.

Throughout 1999 DOE continued meeting its commitments under the Idaho Settlement Agreement. Perhaps the most visible milestone was the April 27, 1999 shipment of the first 42 drums of transuranic waste to the Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico. By 2002 it is expected that 3,100 cubic meters of such waste will have been removed to WIPP for storage. After the Advanced Mixed Waste Treatment Facility (AMWTF) opens in 2003,



Laboratory employees at the INEEL's EBR-1 reactor celebrate the world's first production of usable quantities of nuclear power. This reactor, now a national historic site, is open to the public for tours.

an additional 65,000 cubic meters of transuranic waste will be repackaged and treated at the INEEL to meet WIPP's storage criteria.

Environmental management at the INEEL includes efforts to

- Minimize the creation of new waste
- Reduce the size and quantity of waste through treatment
- Ensure the safe movement of waste through the storage treatment and disposal process.

These efforts will ensure the INEEL retains its world class position in nuclear materials processing.

The INEEL has leveraged its unique infrastructure to benefit the state and region by stimulating and supporting environmental stewardship. For example, the INEEL

- Makes its $4.5 million state-of-the-art firefighter training facility available to Idaho firefighters
- Shares its pollution prevention methodologies with Teton and Yellowstone National Parks
- Mentors local businesses in advanced technologies and best practices in hazardous waste minimization.

INEEL 50 years of Innovation

Now, in its 50th year, the INEEL takes pride in all of its accomplishments and looks forward to an even brighter future. This year marks the appointment of Beverly Cook as Manager of the DOE Idaho Operations (DOE-ID) Office and the selection of Bechtel B&W Idaho (BBWI) as the Laboratory's new contractor effective October 1, 1999.

Technology Innovations with spinoff potential are frequent by-products of INEEL research and testing. INEEL scientists have developed a process for strengthening textile threads that could eliminate the biggest bottleneck in a fabric assembly line. INEEL scientists have also developed an inexpensive anti-body-based identification system for DNA testing. Its long running Special Manufacturing Capability Program provides components for the Abrams M1A2 Main Battle Tank. Such innovations strengthen the INEEL's science culture and stimulate

The INEEL has supported national priorities in energy, science, the environment, and national security for 50 years.

"My priorities are to fulfill DOE's promises to the State of Idaho, while also growing the scientific capabilities of the laboratory"

Beverly Cook,
Manager
DOE-Idaho Operations

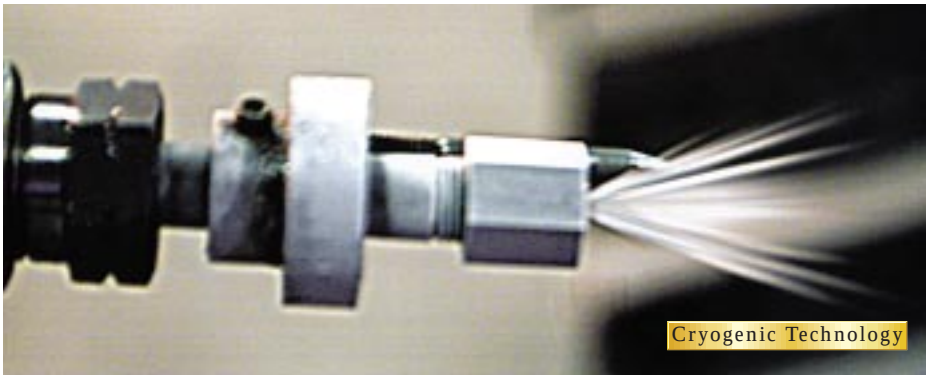
"As the new management and operations contractor at the INEEL, Bechtel B&W Idaho will focus on operational excellence. We will support DOE-ID in meeting the site's cleanup and regulatory commitments while working with DOE to expand the environmental management and nuclear technology missions at the INEEL. Combined with our commitment to assisting regional economic development efforts we look forward to an exciting future at the INEEL"

Dr. Bernard Meyers,
General Manager and
President of BBWI

Introduction

future technology applications, while supporting DOE's core mission.

The INEEL faces a number of technical, political, and budgetary challenges in coming years that will shape its future for years to come. These challenges will continue to be met by the Laboratory's skilled and dedicated workforce as the INEEL begins its second 50 years of national service. As DOE's Lead Laboratory for Nuclear Energy and Environmental Management, the INEEL is positioned to effectively meet the needs of the DOE and the nation now and into the future.


Cryogenic Technology


Inspection Robot


SFSS

In 1999, many INEEL research projects were recognized among the 100 most technologically significant.

INEEL Technology Innovation

During 1999, INEEL scientists and engineers have

- Filed 66 patents
- Participated in one regional startup company
- Licensed 9 fee-bearing technologies
- Stimulated $224,390 in licensing income.

INEEL Research Recognized

Each year, *R&D Magazine* recognizes the 100 most technologically significant products developed over the past year by the world's most creative scientists and engineers. INEEL researchers have been selected to receive five of those awards for 1999. This year's award winners include

- The Supercritical Fluid Slashing System (SFSS) for strengthening textile threads
- A cryogenic cutting tool developed by ZawTech that uses liquid nitrogen
- The Tractrix Valve, a novel, self-sealing apparatus that doesn't leak or wear out
- The Maverick Tank Inspection Robot, which is a submersible, remote-controlled inspection system for aboveground storage tanks
- The High Void-Fraction Multiphase Flowmeter, an innovative device capable of accurately metering "wet gas" content in natural gas wells.

Each of these technologies were originally developed to support DOE missions in energy, environment, national security, and science.

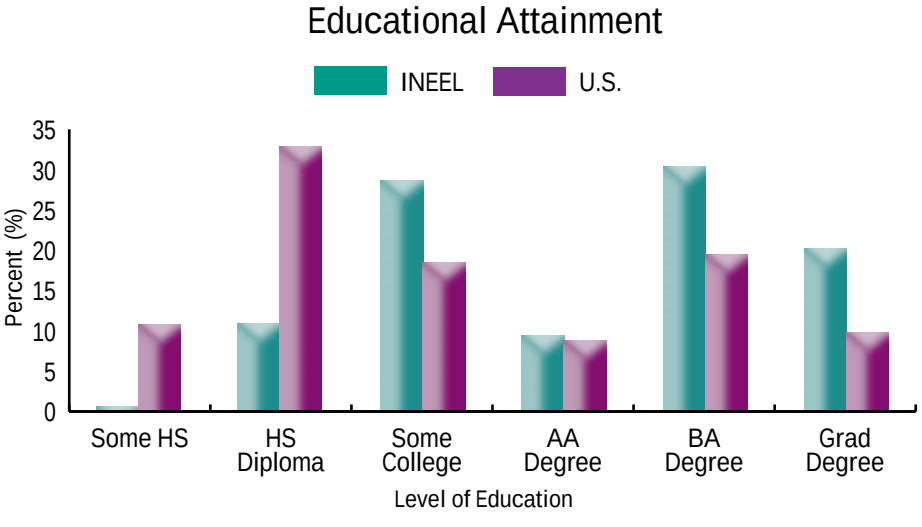
Workforce Characteristics

The INEEL workforce is made up of 7,893 men and women engaged in a wide range of occupations supporting its technical and scientific missions. As a workforce, INEEL employees tend to be more highly educated, predominantly male, and older than the Idaho labor force.

About 51% of the INEEL workforce have earned at least a Bachelor degree, while another 28% have taken some college courses beyond high school. For the nation as a whole, 29% have at least a Bachelor degree, while 44% of all U.S. workers have never attended a college course.

Specialty occupations including engineers, scientists, and other professionals comprise 27% of the INEEL workforce, while administrators and managers make up another 20%. These two occupational groups make up much smaller proportions of the overall Idaho workforce (3% and 11%, respectively). In

Thirteen percent of the INEEL's professional, scientific, and engineering occupations are filled by women.



Workforce Characteristics

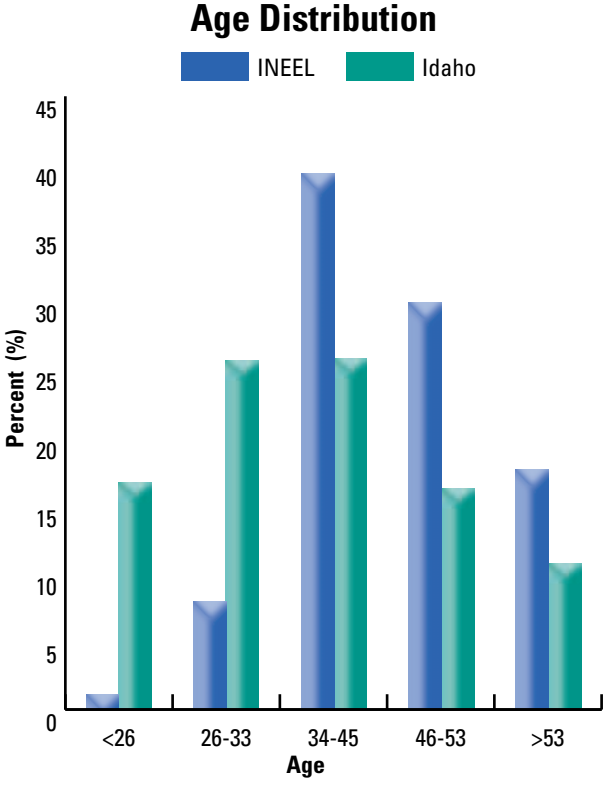
a similar comparison, clerical workers comprise 5% of the INEEL workforce, but make up 9% of all Idaho workers.

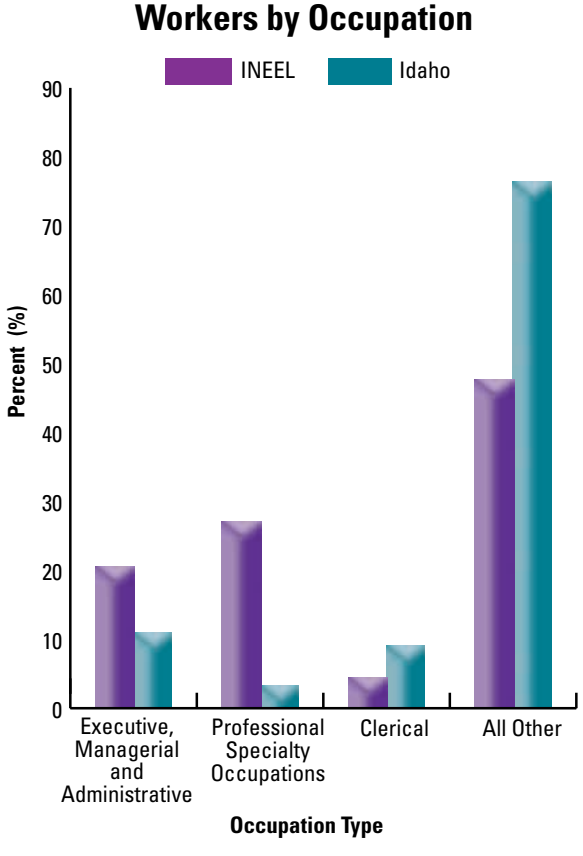
The remaining half of the INEEL workforce is involved in construction, communication, computer support, and service occupations. By comparison, nearly 80% of Idaho's workers are involved in occupations other than the three major groupings mentioned above, including agricultural, mining and forestry occupations, which are not at all represented among the INEEL workforce.

The INEEL workforce reflects national employment trends in gender, age, education, and occupational characteristics.

Nearly 40% of the INEEL workforce is between 34 and 45 years of age, with another 31%

Twenty-one percent of the INEEL workforce hold a managerial or administrative position.

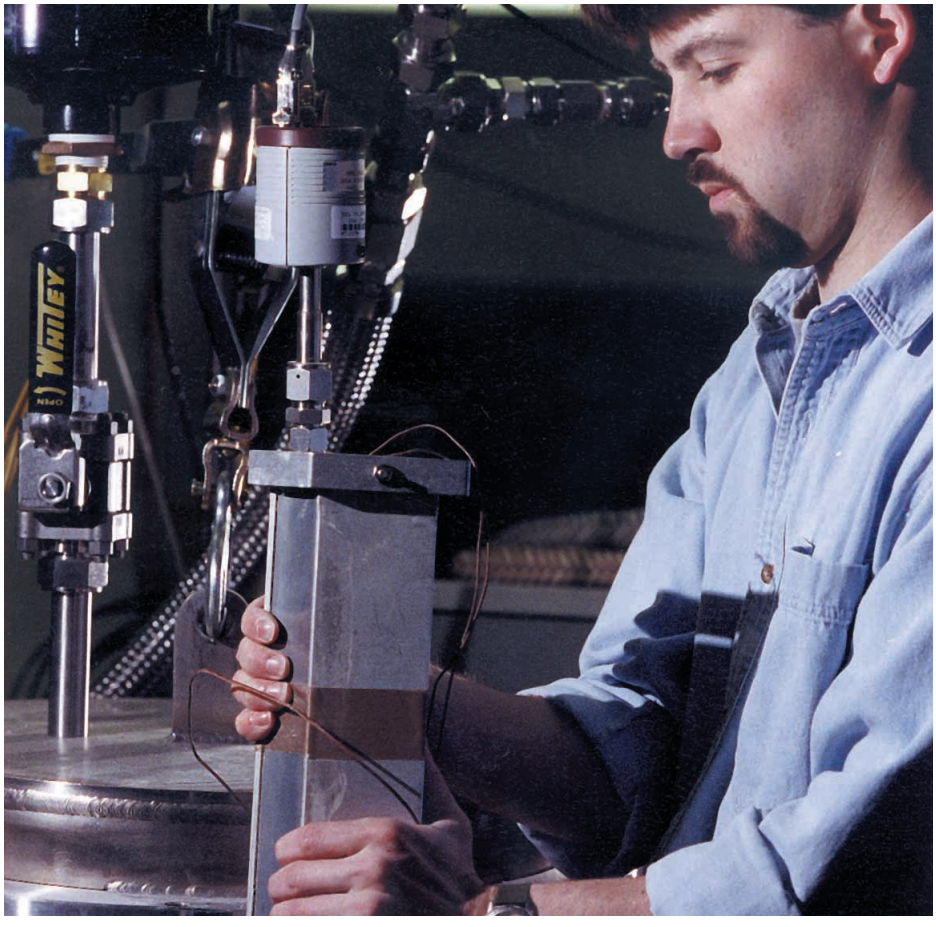




1999 INEEL Workforce Profile

The INEEL employs 7,893 people

- 1,886 (24%) are women
- 5,642 (71%) are between 34 and 53 years of age
- 3,999 (51%) have at least a Bachelor's degree
- 6,488 (82%) are married
- 1,618 (21%) are managerial or administrative workers
- 2,139 (27%) are professional or scientific workers
- 3,765 (48%) are construction, communication, and other support workers
- 371 (5%) are clerical workers.



Ten percent of INEEL workers are under the age of 34.

between the ages of 46 and 53. Only about 10% of the INEEL workforce is under the age of 34. Idaho's labor force is much younger, with more than 40% under the age of 34.

Nearly 94% of INEEL clerical workers are female, while 13% of the INEEL's professional, scientific, and engineering occupations are filled by women. In 1999, 38% of executive and managerial positions were filled by women.

A tradition of continuing education, professional development, and occupational upgrading also describes the INEEL workforce. According to a 1999 personnel survey, INEEL employees enrolled in 1,273 courses for college credit, 4,170 job-related workshops and noncredit courses, and 2,121 workshops and noncredit courses for personal improvement between October 1, 1998, and September 30, 1999.

Economic Impacts

Employees at the INEEL earned gross salaries totaling $440 million in 1999. About 57% of those gross wages ($253 million) can be considered net of taxes, pension and health insurance contributions and thus available for local spending. Net wages and salaries constitute the direct earnings effect on the local economy.

INEEL families tend to reside in the more populated areas.

When local businesses are stimulated by purchases made by INEEL household members, they in turn make purchases of raw materials and supplies to meet the increased demand. A calculated portion of such purchases occur locally. The sum total of local business activity occurring because of the increased consumer spending is called an "induced" effect; while the additional wages paid to workers providing the induced materials and supplies are considered "indirect" effects of the original net earnings. Thus, INEEL net wages of $253 million result in indirect wages of $120 million. Altogether, INEEL employment is responsible for about $373 million in wages in the seven county area, or about 15% of wages received by all nonfarm wage earners in the seven county area.

An estimated 7,727 full- and part-time jobs are needed throughout the local economy to meet the demand for the additional materials and supplies stimulated by the consumer purchases made by INEEL's 7,893 employees and their families.

Day to day operations at the many facilities of the INEEL include purchase and use of a wide variety of supplies, equipment and services. Of the $132 million in purchases made within Idaho and the surrounding six state area during 1999, about $86 million went to vendors in southeastern Idaho.

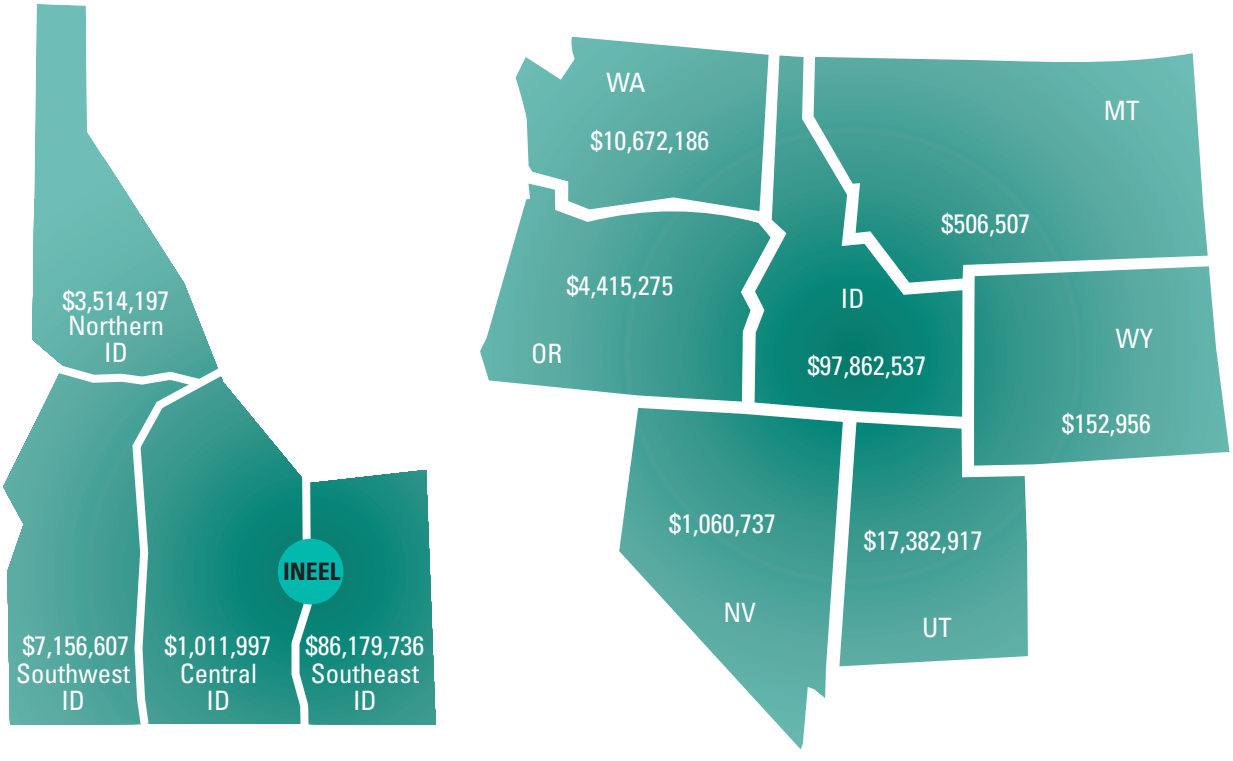
More than $23 million in retirement benefits were paid in 1999 to Idaho residents who had been employed in private sector capacities at the INEEL in previous years. This number

Local businesses, such as construction companies benefit from a healthy economy.

does not include former federal employees who worked for the Atomic Energy Commission or DOE.

In 1999, approximately 4,887 persons visited the INEEL, with 3,097 out of area visitors accounting for 7,113 visitor days. Using federal per diem standards for 1999, the commercial cost equivalent of their over night lodging equals a $356,000 expenditure within the local economy. These nonlocal visitors also made an estimated $213,000 in local purchases of food and other consumer goods and services while visiting southeastern Idaho.

INEEL Procurement Dollars Affect Many Communities



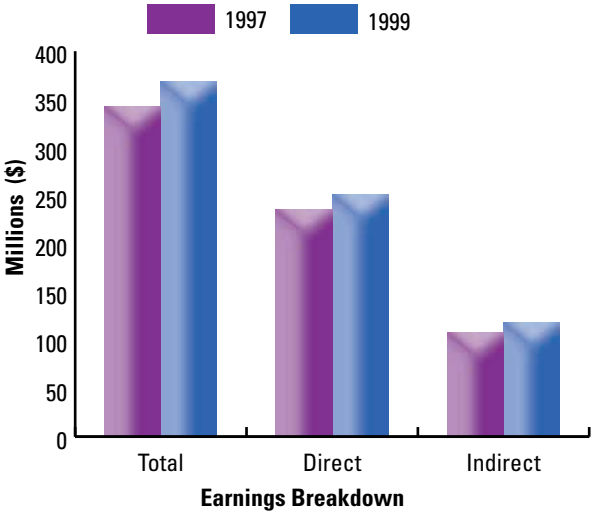
Economic Impacts

1999 Economic Impact Highlights

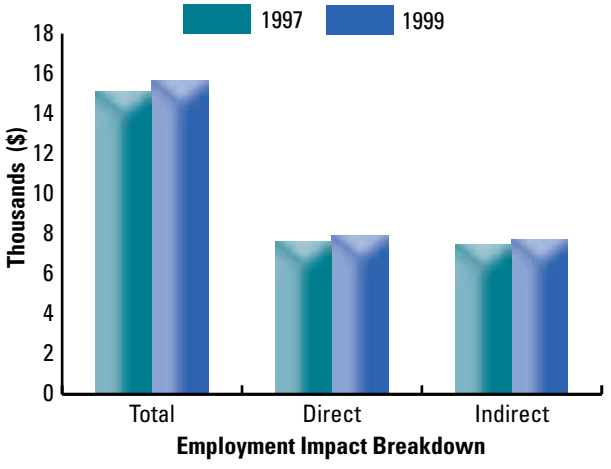
INEEL's infusion into Idaho's economy is approximately $500 million in 1999

- 15,621 jobs in southeastern Idaho are directly or indirectly dependent upon INEEL wages and salaries
- $373 million in area wages and salaries result either directly or indirectly from INEEL employment
- $132 million in equipment and services are purchased from vendors in Idaho and surrounding states
- $23 million in retirement benefits are annually paid to former private sector employees now residing in Idaho
- $3 million for economic diversification and community development is dispersed under the Idaho Settlement Agreement
- $569,000 in local lodging and consumer purchases are made by out-of-area visitors to the INEEL.

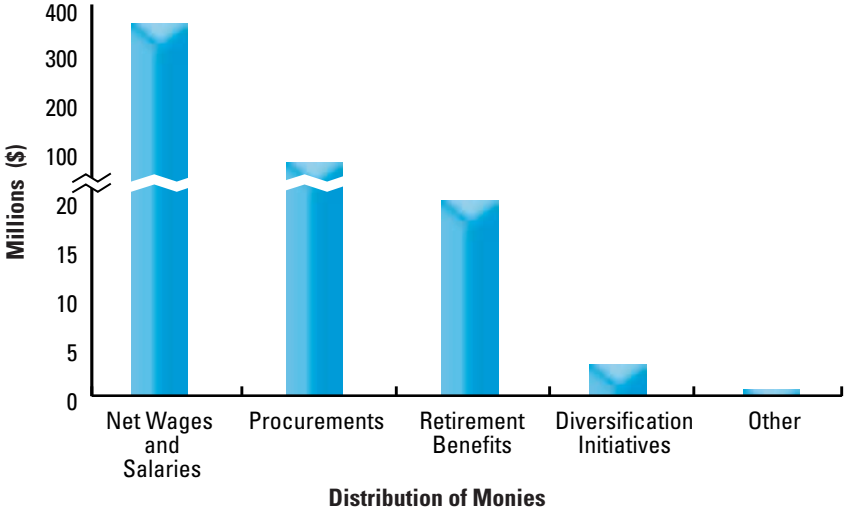
Changes in Earnings Impacts



Changes in Employment Impacts



INEEL Economic Infusion into the Idaho Economy

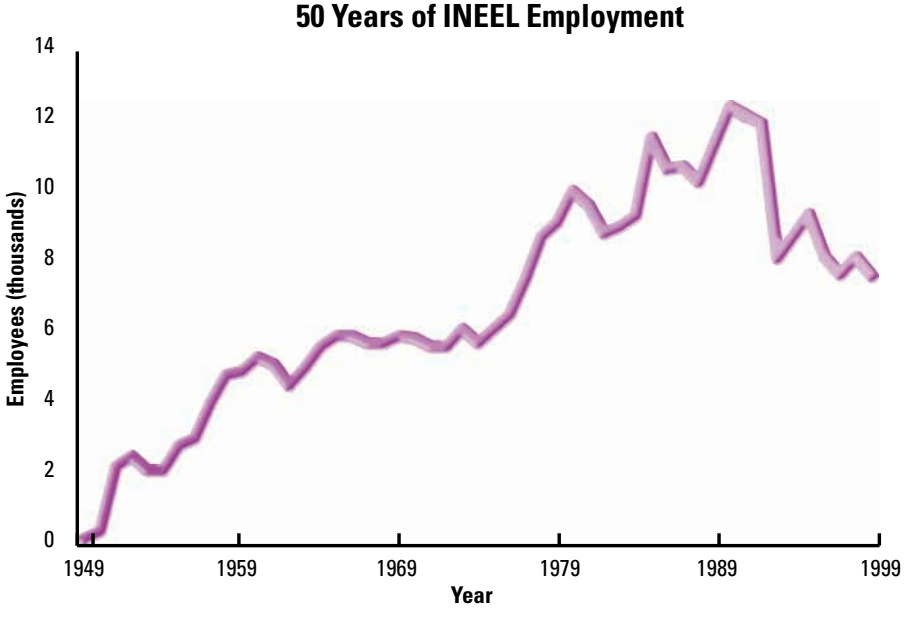


Population Impacts

All but 78 of the INEEL's 7,893 employees reside in one of seven eastern Idaho counties, comprising 9% of that area's 80,438 households. Most INEEL households (6,086) reside in one of the region's ten largest cities, where they make up 12% of all urban households. Another 311 employees live in other, smaller incorporated areas within the region. About 1,420 INEEL employees reside in unincorporated and farm areas of eastern Idaho.

Bonneville and Butte counties have the highest proportion of INEEL-dependent households (17 and 15%, respectively). However, Bonneville's 4,694 INEEL households far outnumber the 169 residing in Butte County. Roughly 9% of Bingham and Jefferson counties are INEEL-dependent (992 and 509 INEEL families, respectively). Bannock (619 families) and Madison (124 families) are about 2% INEEL-dependent. Custer county's 68 INEEL families

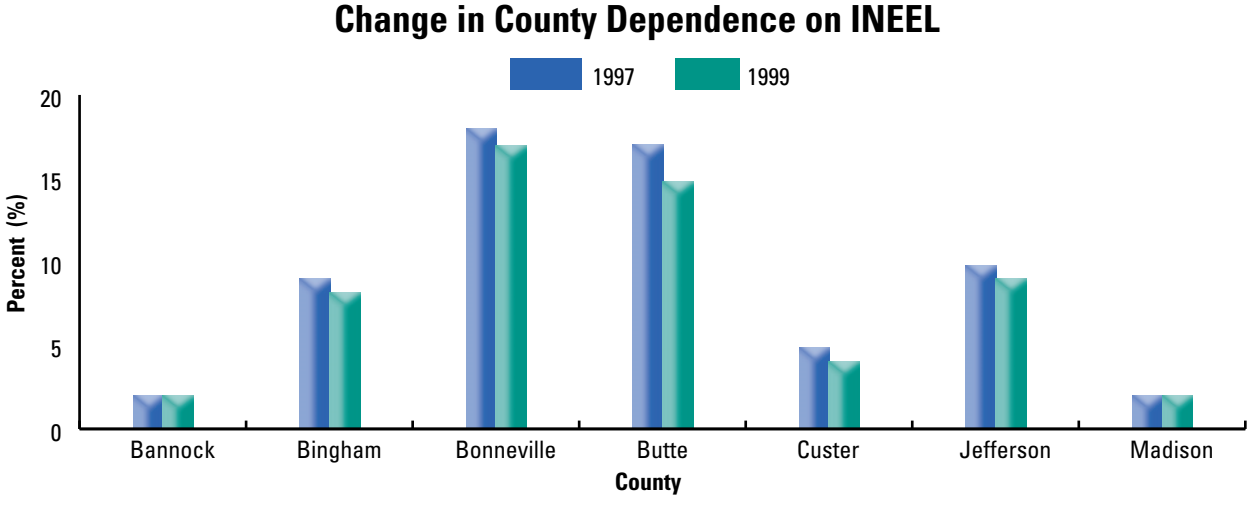
INEEL households comprise 9% of the total 80,438 households in the seven eastern Idaho counties.

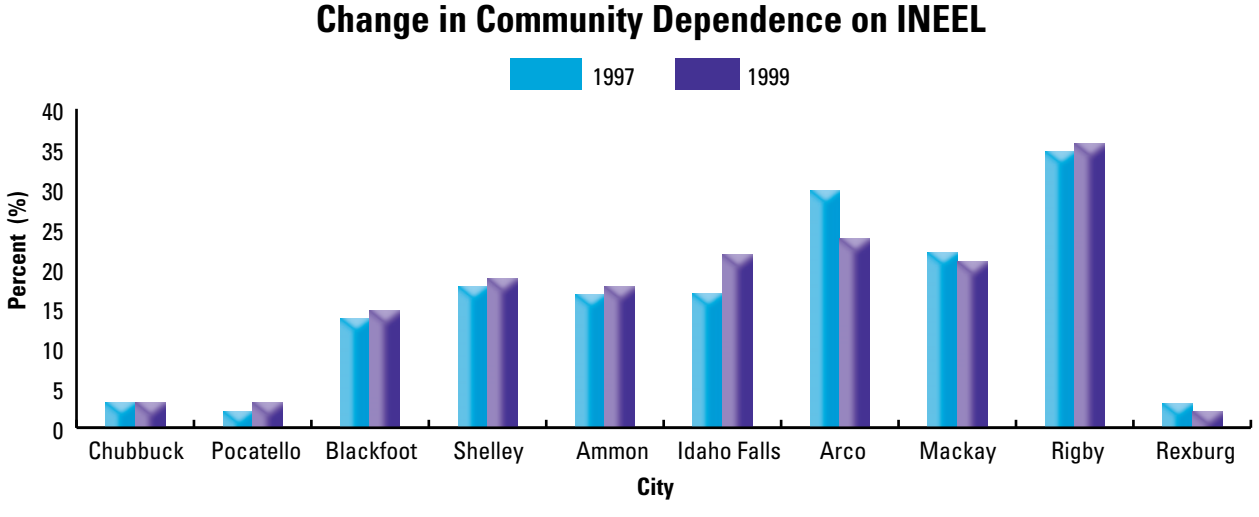


account for 4% of that county's resident households.

Rigby's 315 INEEL families comprise 36% of that city's 874 resident households. Arco, Idaho Falls, Shelley and Ammon have between 19% and 25% INEEL-dependent households.

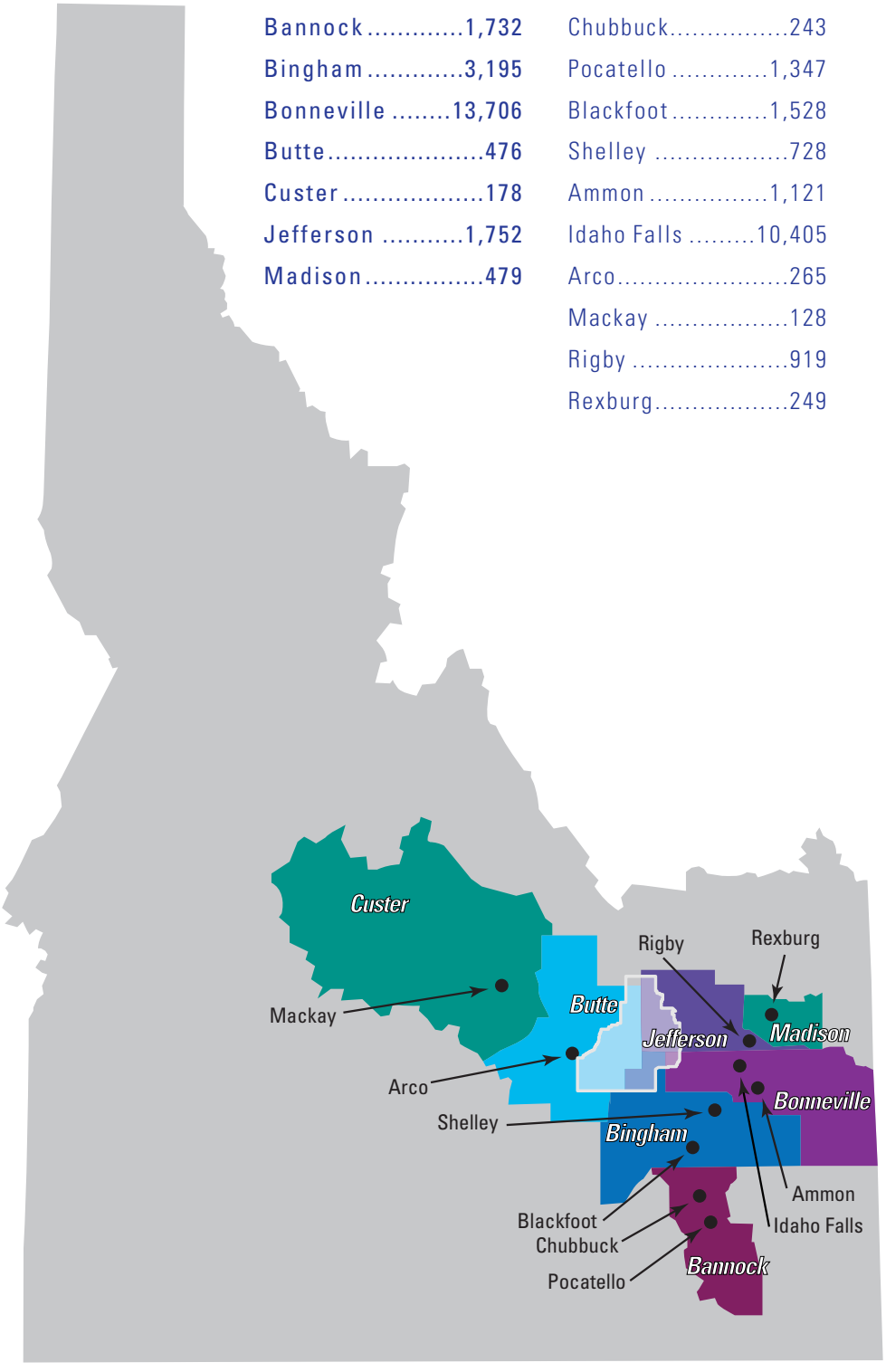
Between 1997 and 1999 the residential patterns of INEEL employees remained very stable and consistent. The slight increases in INEEL-dependence noted for Bannock and Madison counties are due primarily to projected declines in the total populations of those areas. Increases in INEEL-dependence noted for area cities, on the other hand, reflect an increasing tendency for INEEL families to reside in incorporated areas.





INEEL Employees and Dependents

By County		By City	
Bannock	1,732	Chubbuck	243
Bingham	3,195	Pocatello	1,347
Bonneville	13,706	Blackfoot	1,528
Butte	476	Shelley	728
Custer	178	Ammon	1,121
Jefferson	1,752	Idaho Falls	10,405
Madison	479	Arco	265
		Mackay	128
		Rigby	919
		Rexburg	249



1999 Population Impact Highlights

Local population impacts include

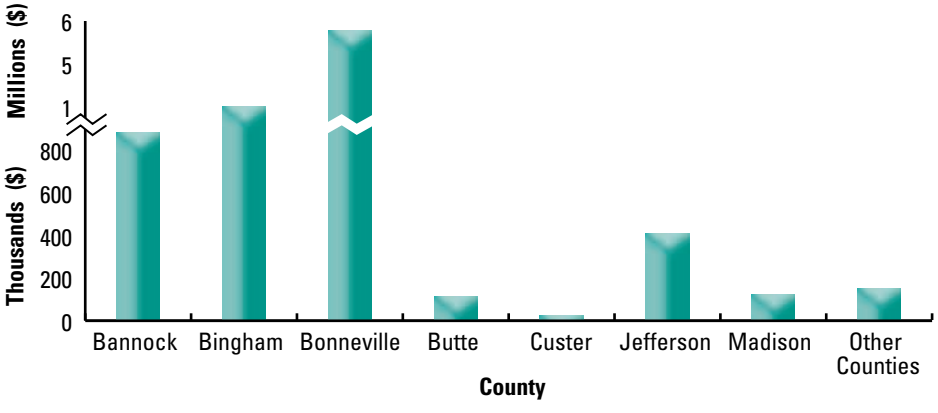
- INEEL employment increased slightly from 7,637 in 1997 to 7,893 in 1999
- INEEL employees and their families account for 9% of households in the seven county region, and 12% of households in the region's 10 largest cities
- Bonneville County is home to 4,694 INEEL families, more than any other county
- Rigby is the most INEEL-dependent community, with 36% of its 874 household being INEEL-related
- Residential patterns among INEEL employees have changed little between 1997 and 1999.

Tax Impacts

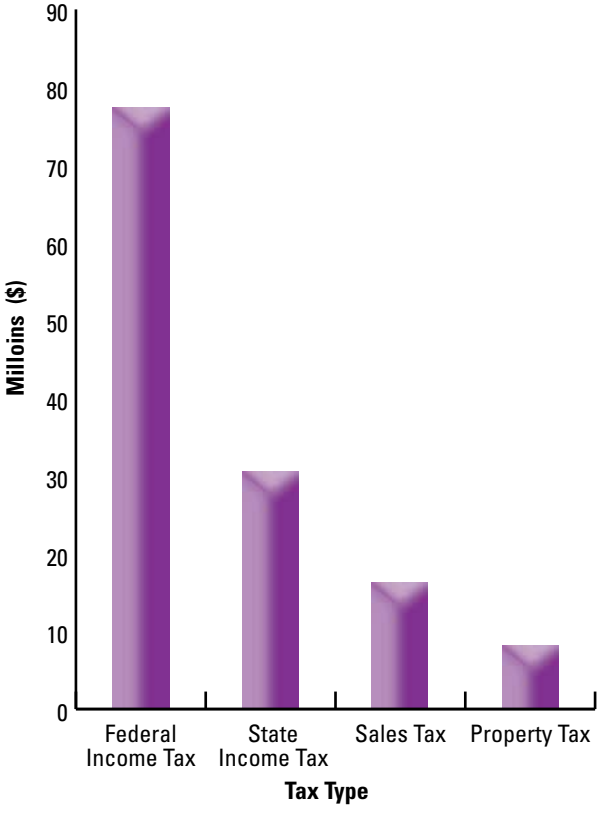
Nonlocal taxes paid by employees at the INEEL include federal and state taxes on income, and sales tax collected by the state of Idaho on the sale of consumer goods. In addition, local governments levy property taxes to support local services including public schools, libraries, emergency response teams, and local road and bridge maintenance.

The average total tax paid by an INEEL household varies considerably according to their wage, housing value, and taxing district within which they reside. The charts shown estimate the aggregate total and per household taxes paid by INEEL households for three types of taxes: federal and state income taxes (using employer withholding amounts as estimates of the actual amount of income tax paid); Idaho sales tax (applying a fixed 2.65% of gross household income), and county, city and school district property taxes (based on average INEEL property values and district levies).

INEEL households paid a total of $133.8 million in taxes in 1999.



Breakdown of Taxes Paid by all INEEL Households

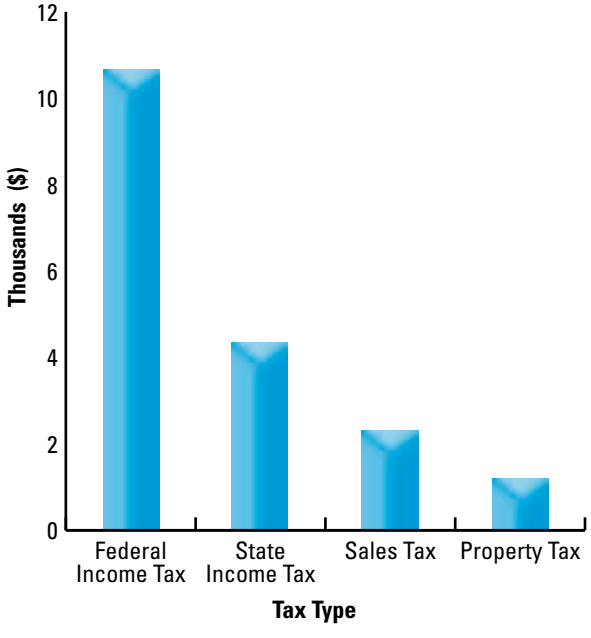


1999 Tax Highlights (aggregate)

Based on an average INEEL wage of $55,793 and total household income of $79,673, the aggregate of all INEEL households paid $133.8 million in taxes in 1999

- $77.3 million in federal income tax
- $31 million in Idaho state income tax
- $16.7 million in Idaho sales tax
- $8.7 million in Idaho property taxes.

Breakdown of Taxes Paid per INEEL Household

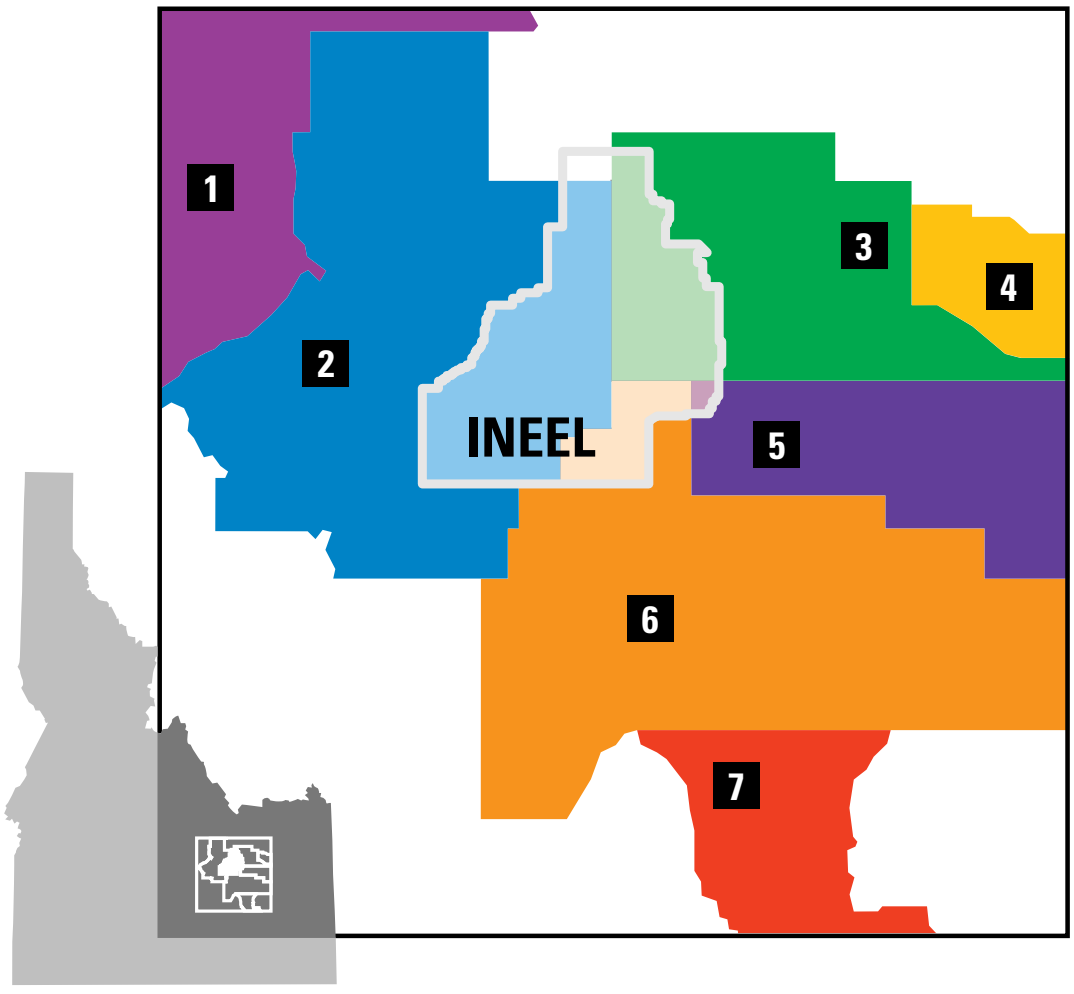


1999 Tax Highlights (per household)

Based on an average INEEL wage of $55,793 and total household income of $79,673, the typical INEEL household paid $18,453 in taxes in 1999

- $10,671 in federal income tax
- $4,287 in Idaho state income tax
- $2,298 in Idaho sales tax
- $1,197 in Idaho property taxes.

Tax Impacts



Total INEEL Tax Support to Southeastern Idaho Counties

1 Custer

Federal tax	$734,005
State tax	$294,874
Sales tax	$158,088
Property tax	$27,384
Total	**$1,214,350**

2 Butte

Federal tax	$1,804,429
State tax	$724,898
Sales tax	$388,632
Property tax	$127,651
Total	**$3,045,610**

3 Jefferson

Federal tax	$5,397,994
State tax	$2,168,549
Sales tax	$1,162,604
Property tax	$417,686
Total	**$9,146,833**

4 Madison

Federal tax	$1,238,633
State tax	$497,599
Sales tax	$266,773
Property tax	$139,830
Total	**$2,142,835**

5 Bonneville

Federal tax	$50,631,045
State tax	$20,340,133
Sales tax	$10,904,760
Property tax	$5,878,056
Total	**$87,753,994**

6 Bingham

Federal tax	$10,444,278
State tax	$4,195,805
Sales tax	$2,249,457
Property tax	$1,080,269
Total	**$17,969,809**

7 Bannock

Federal tax	$6,361,376
State tax	$2,555,571
Sales tax	$1,370,094
Property tax	$846,981
Total	**$11,134,021**

Community Involvement

Idahoans are known to give generously of their time and income in support of community and other causes. INEEL employees and their families provide significant support to their communities through their voluntary participation in community affairs and voluntary financial contributions.

INEEL employees have a holiday tradition of donating gifts to those in need.

According to estimates generated by Equifax Corporation, the average Idaho family annually contributes $1,551 to all causes. A recent personnel survey reveals that the average INEEL household contributes nearly twice that amount—an average of $2,926 per household.

While comparison figures for the contribution of volunteer time are not readily available for the Idaho population, INEEL employees and their families have indicated significant participation in the life of their communities. A 1999 personnel survey reveals a total of 1,386,949 hours of community service, or about 64 hours per month, allocated for such activities as church, youth, education, and other community groups and functions. The total includes all members of a household, including children.

Each household has a different pattern of volunteer activity, so a "typical" pattern of volunteer involvement is difficult to determine. When the volunteer activities of all INEEL households are summed and averaged, a pattern of volunteer activity emerges. About 39% of all volunteer activity is church-related, followed by 29% for youth activities including Scouting and sports. Community service, education involvement, and other miscellaneous involvements each comprise about 10% of the typical INEEL family's volunteer time.

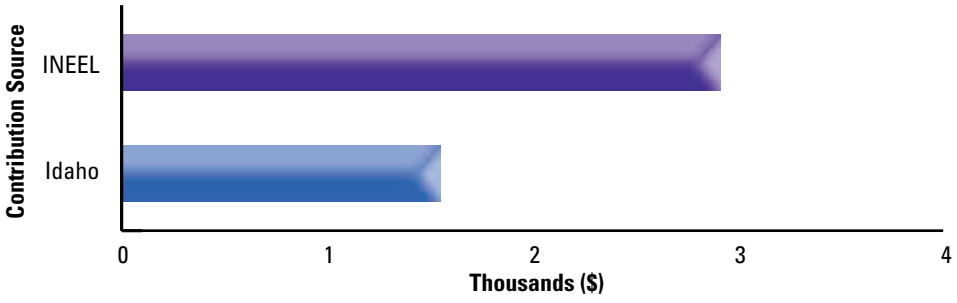
1999 Community Involvement Highlights

In 1999, INEEL households contributed

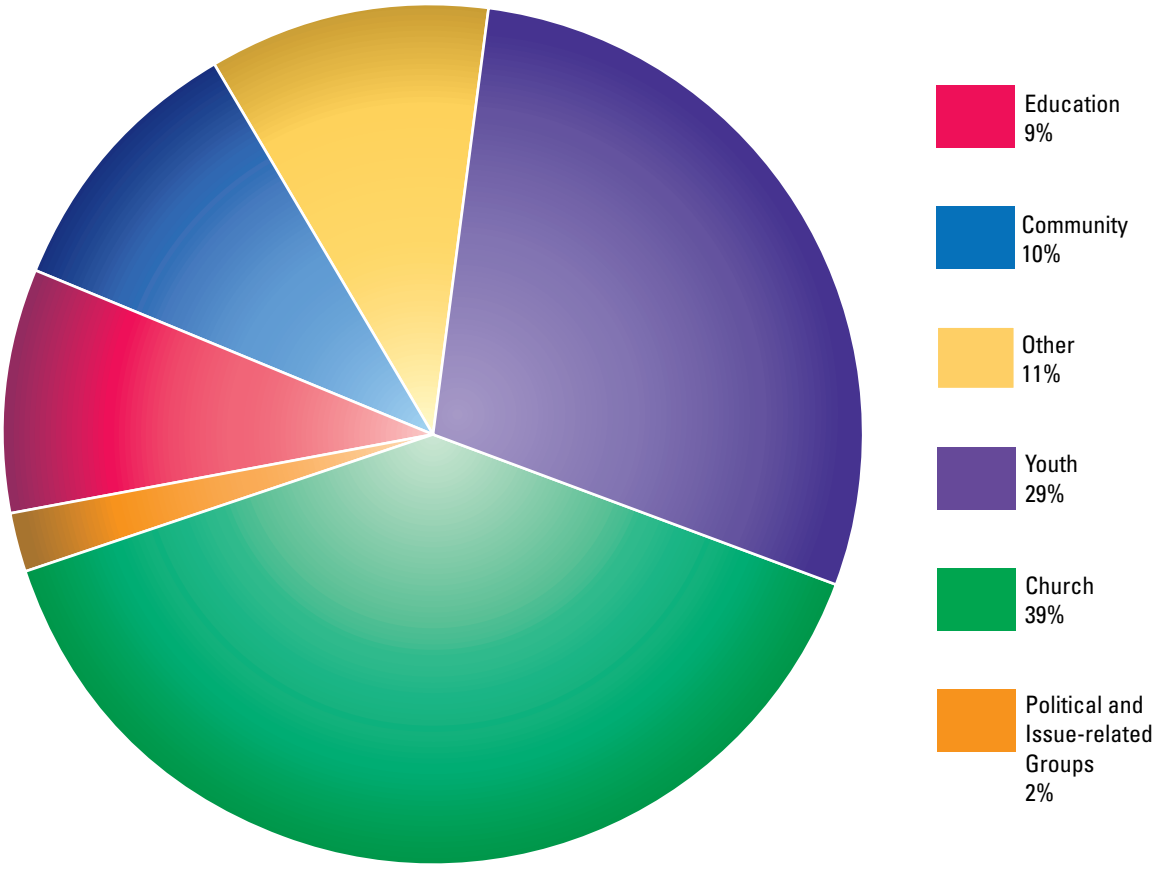
- 1,386,949 volunteer hours—an average of 64 hours per household per month
- $21.2 million to charitable causes—an average of $2,926 per household per year.

Community Involvement

Charitable Contributions per Household



Annual Volunteer Hours
1,386,949 Total Hours



The Department of Energy Mission

Energy Resources

Assure adequate supplies of clean energy

Reduce U.S. vulnerability to supply disruptions

Encourage efficiency and advance alternative and renewable energy technologies

Increase energy choices for all consumers

National Security

Support and maintain a safe, secure, and reliable enduring stockpile without nuclear testing

Safely dismantle and dispose of excess nuclear weapons

Provide technical leadership for national and global nonproliferation and nuclear safety activities

Develop and support nuclear reactor plans for naval propulsion

Environmental Quality

Reduce the environmental, safety, and health risks and threats from DOE facilities and materials

Safely and permanently dispose of civilian spent nuclear fuel and defense related radioactive waste

Develop the technologies and institutions required for solving domestic and international environmental problems

Science and Technology

Use the unique resources of its laboratories and the country's universities to maintain leadership in basic research and to advance scientific knowledge

Focus applied research and technology development in support of its other business lines

Contribute to the Nation's science and mathematics education

Deliver relevant scientific and technical information

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